REMARKS/ARGUMENTS

The claims have been limited to a clay mineral that is a phyllosilicate selected from the group consisting of kaolinite, smectite, muscovite, montmorillonite, bentonite, hectorite and mixtures thereof. This limitation is fully supported throughout the specification, by the Examples, and by previous Claims 23 and 24. No new matter has been entered.

Plapper is the only applied reference relating to tanning that discusses particle size. However, Plapper relates to aluminosilicates, not phylosilicates, and certainly does not disclose or discuss phyllosilicates selected from the group consisting of kaolinite, smectite, muscovite, montmorillonite, bentonite, hectorite and mixtures thereof.

Instead, Plapper teaches that aluminosilicates have certain advantages, as described at col. 4, lines 30-63 of the reference, and that in view of these advantages aluminosilicates should be used in partial replacement of basic metal salt-tanning agents and tanning auxiliaries. See the paragraph bridging columns 4 and 5 of Plapper. Plapper broadly suggests a particle size range for his disclosed aluminosilicates of from 0.2 to 25 μm (col. 9, lines 15-20).[1] But again, Plapper does not disclose phyllosilicates, as claimed.

Because Plapper is silent with regard to phylosilicates, now required by Claim 32, the rejection over this reference alone should be withdrawn, as should the rejection over Plapper in view of Komforth, as Komforth is admittedly silent with regard to particle size and only broadly mentions kaolin, not phylosilicates, as a "carrier" at col. 4, line 22.

While perhaps unnecessary in view of the present scope of the claim, in establishing the patentability of the present application the inventors have shown, in the

[1] Applicants assume for the purposes of this response only that the units of particle size in Plapper (μ) correspond to those in the present application (μm).

specification, that using particles with sizes like those used in Plapper, i.e., particles of 3.2, 5.1, 7.6, and 13.2 μm, provides poor results, but using particles having the sizes claimed herein provides exceptionally good results.[2] While the Examiner points out that a reference is not limited to its examples, Applicants note the following passages from the MPEP which establish that Applicants' comparison against the closest prior art is sufficient, and that their exemplary showing is sufficient to establish a reasonable correlation between the showing and the entire scope of the claim as a trend in the exemplified data is present that extends the probative value thereof to the entire claim:

> **716.02(e)**
>
> An affidavit or declaration under 37 CFR 1.132 must compare the claimed subject matter with the closest prior art to be effective to rebut a *prima facie* case of obviousness. *In re Burckel*, 592 F.2d 1175, 201 USPQ 67 (CCPA 1979). "A comparison of the *claimed* invention with the disclosure of each cited reference to determine the number of claim limitations in common with each reference, bearing in mind the relative importance of particular limitations, will usually yield the closest single prior art reference." *In re Merchant*, 575 F.2d 865, 868, 197 USPQ 785, 787 (CCPA 1978) (emphasis in original). Where the comparison is not identical with the reference disclosure, deviations therefrom should be explained, *In re Finley*, 174 F.2d 130, 81 USPQ 383 (CCPA 1949), and if not explained should be noted and evaluated, and if significant, explanation should be required. *In re Armstrong*, 280 F.2d 132, 126 USPQ 281 (CCPA 1960) (deviations from example were inconsequential).
>
> **2144.08:**
>
> When considering whether proffered evidence is commensurate in scope with the claimed invention, Office personnel should not require the applicant to show unexpected results over the entire range of properties possessed by a chemical compound or composition. See, e.g., *In re Chupp*, 816 F.2d 643, 646, 2 USPQ2d 1437, 1439 (Fed. Cir. 1987). Evidence that the compound or composition possesses superior and unexpected properties in one of a spectrum of common properties can be sufficient to rebut a *prima facie* case of obviousness. *Id.*
>
> For example, a showing of unexpected results for a single member of a claimed subgenus, or a narrow portion of a claimed range would be sufficient to rebut a *prima facie* case of obviousness if a skilled artisan "could ascertain a trend in the exemplified data that would allow him to reasonably extend the probative value thereof." *In re Clemens*, 622 F.2d 1029, 1036, 206 USPQ 289, 296 (CCPA 1980) (Evidence of the

[2] See Appendix A attached hereto for a detailed review of this comparative evidence, discussed in Applicants' last response.

> unobviousness of a broad range can be proven by a narrower range when one skilled in the art could ascertain a trend that would allow him to reasonably extend the probative value thereof.). But see, *Grasselli*, 713 F.2d at 743, 218 USPQ at 778 (evidence of superior properties for sodium containing composition insufficient to establish the non-obviousness of broad claims for a catalyst with "an alkali metal" where it was well known in the catalyst art that different alkali metals were not interchangeable and applicant had shown unexpected results only for sodium containing materials); *In re Greenfield*, 571 F.2d 1185, 1189, 197 USPQ 227, 230 (CCPA 1978) (evidence of superior properties in one species insufficient to establish the nonobviousness of a subgenus containing hundreds of compounds); *In re Lindner,* 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972) (one test not sufficient where there was no adequate basis for concluding the other claimed compounds would behave the same way). However, an exemplary showing may be sufficient to establish a reasonable correlation between the showing and the entire scope of the claim, when viewed by a skilled artisan. See, e.g., *Chupp*, 816 F.2d at 646, 2 USPQ2d at 1439; *Clemens*, 622 F.2d at 1036, 206 USPQ at 296. On the other hand, evidence of an unexpected property may not be sufficient regardless of the scope of the showing. Usually, a showing of unexpected results is sufficient to overcome a *prima facie* case of obviousness. See, e.g., *In re Albrecht*, 514 F.2d 1389, 1396, 185 USPQ 585, 590 (CCPA 1975). However, where the claims are not limited to a particular use, and where the prior art provides other motivation to select a particular species or subgenus, a showing of a new use may not be sufficient to confer patentability. See *Dillon*, 919 F.2d at 692, 16 USPQ2d at 1900-01. Accordingly, each case should be evaluated individually based on the totality of the circumstances.

Thus, because Applicant has shown that a substantial, unpredicted benefit is in fact obtained when operating according to the claims as opposed to using the particle sizes exemplified in Plapper, and because Plapper is silent with regard to the claimed phylosilicates, the rejection over this reference alone should be withdrawn, as should the rejection over Plapper in view of Komforth.

Finally, and with regard to the rejection over Komforth in view of Cramer, Komforth is admittedly silent with regard to particle size and only broadly mentions kaolin, not phylosilicates, as a "carrier" at col. 4, line 22.

Cramer is not related to tanning at all. Rather, Cramer relates to the treatment of soft surfaces with a certain coating composition, these soft surfaces including leather. See paragraph 0069 of the reference. Leather is the *product* of a tanning process. The present invention is concerned with the treatment of *hides* to provide leather. See specification page 1, lines 10ff (emphasis supplied):

> In tanning, readily perishable animal hide substance is processed by preparatory treatment with tanning assistants, chemical reaction with tanning agents and appropriate finishing to give resistant leather which remains soft and supple and has the desired performance characteristics (cf. Rompp Chemie Lexikon, 9th edition, 1995, page 1538). The high water content stabilizing the collagen structure of the original hide substance is reduced thereby and irreversible stabilization is realized by crosslinking by means of tanning agents.

Thus, the components in Cramer's coating compositions are not relevant to Komforth's tanning agent, or to a method of tanning. Moreover, neither reference discloses phylosilicates. As such, the rejection should be withdrawn.

Accordingly, and in view of the above, Applicants respectfully request the withdrawal of the outstanding rejections, and the passage of this case to Issue.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

Richard L. Treanor
Attorney of Record
Registration No. 36,379

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 06/04)

Appendix A: Comparison against Plapper's particle sizes:

The present specification explains that a tanning method using particles having sizes as claimed herein provides a significantly improved selective filling effect, i.e. loose regions are preferably filled, with the result that an improvement in leather quality and surface yield is achieved. In addition, grain tightness is considerably improved, i.e. creasing or spliceability on the surface is considerably reduced or avoided, and the leather quality is increased by an improved embossability and by an increase in tensile strength. See, e.g., specification page 5.[3]

An important quality feature in tanning, in particular in the case of chrome-free leathers, is the shaveability of the semifinished product. This is also improved by the invention, resulting in improved surface characteristics and a level thickness of the shaved hide and reduced tool wear, in particular knife wear, during the shaving process. In addition, the time gain owing to the improved processibility due to the reduced adhesion of the shaving knife is also considerable.

These improvements of the claimed invention are shown in Table 1 at Specification page 7, where particles having sizes very close to those used in Plapper[4] and outside the presently claimed range (denoted "C") are compared with several examples according to the invention using the presently claimed particles (denoted

---

[3] A further substantial advantage of the claimed process is a significant improvement in environmental compatibility by virtue of the fact that liquor exhaustion, in particular with respect to the fatliquoring agent, is improved by up to 50% with the invention process, with a correspondingly lower wastewater pollution. See specification page 6.

[4] Plapper's Examples use large particles: see, e.g., aluminosilicates A - C at columns 13-14 of the reference using particle sizes of 3-6 μm (A), and 5.4 μm (B and C). Aluminosilicate H uses particles of 7 μm (col. 16) and aluminosilicate R uses particles of 12.3 μm (Col. 19).

"E"):

TABLE 1

	Clay mineral	Mean particle size [μm]	Solids content of liquor [g]	Shaveability [Rating 1–5]	Shrinkage temperature [° C.]
C 1.0	—	—	—	3	79
C 1.1	Kaolin	13.2	3.8	3.5	77
C 1.2	Kaolin	7.6	2.9	3	78
C 1.3	Kaolin	5.1	2.7	2.5	78
C 1.4	Kaolin	3.2	1.4	2.5	79
E 1.1	Kaolin	1.3	0.55	1.5	81
E 1.2	Montmorillonite	0.6	0.30	1	83
E 1.3	Kaolin/ montmorillonite	bimodal 0.6/3.2	0.7	1	82
E 1.4	Kaolin/ bentonite	0.2/1.3	0.35	1	82

A comparison of the results of comparative experiments C1.0 to C1.4 and of the examples according to the invention E1.1 to E1.4 shows a substantial reduction in the solids content of the liquor after the tanning process (fourth column in table 1), i.e. a substantial improvement in the liquor exhaustion, and an improvement in the shaveability (5th column) and the shrinkage temperature (last column).

Table 2 of the present specification similarly shows a substantial quality improvement with respect to body, grain tightness, softness, levelness of the dyeing/fatliquoring and with respect to tensile strength and stitch tear resistance for the leathers obtained in examples E2.1 and E2.2 according to the invention compared with comparative examples C2.0 and C2.1, where the clay mineral particle size in C2.1 was 13.2μm:

TABLE 2

	Clay mineral	Body	Grain tightness	Softness	Tensile strength [N]	Stitch tear resistance [N]	Levelness Dyeing/ Fatliquoring	COD [mg O_2/l liquor]
C 2.0	—	3	3.5	3	428	302	3	16 200
C 2.1	C 1.1	3	3	3.5	410	292	2.5	14 800
E 2.1	E 1.1	2	2.5	2	452	319	1	10 700
E 2.2	E 1.4	1.5	2	2.5	449	328	1.5	6 900

In addition, particles outside the presently claimed range and again similar to what was used in Plapper having a size of 13.2 and 5.1 μm were used in Comparative Examples C3.1 and C3.2, respectively, and compared against three embodiments of the present invention using claimed particle sizes as used above in examples E1.1 - E1.3. As shown in Table 3, the results demonstrate an improvement in all quality features for the invention particles, i.e., body, grain tightness, softness, tensile strength, stitch tear resistance, levelness, embossing, and liquor exhaustion:

TABLE 3

	Clay mineral	Liquor exhaustion	Body	Grain tightness	Softness	Tensile strength [N]	Stitch tear resistance [N]	Levelness	Embossing
C 3.0	—	3.0	3	3.5	3	268	192	3	3
C 3.1	C 1.1	4	3	3	3.5	248	188	2.5	3.5
C 3.2	C 1.3	3.5	2.5	2.5	3	259	194	2	3
E 3.1	E 1.1	2.5	2	2.5	2	277	201	1	2.5
E 3.2	E 1.2	2	2	1.5	2	284	223	1	1.5
E 3.3	E 1.3	1.5	1.5	2	2.5	289	218	1.5	1.5